

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB02/04441

A. CLASSIFICATION OF SUBJECT MATTER  
Int.Cl<sup>7</sup> H01S5/323, C30B29/38

According to International Patent Classification (IPC) or to both national classification and IPC.

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
Int.Cl<sup>7</sup> H01S5/00-5/50, H01L33/00, C30B29/38

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
Jitsuyo Shinan Koho 1922-1996 Tokoku Jitsuyo Shinan Koho 1994-2003  
Kokai Jitsuyo Shinan Koho 1971-2003 Jitsuyo Shinan Tokoku Koho 1996-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
JICST FILE (JOIS)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	R. DWILINSKI et al., 'ON GaN CRYSTALLIZATION BY AMMONOTHERMAL METHOD', Vol.90, No.4, ACTA PHYSICA POLONICA A, 1996, pages 763 to 766	1-11
A	K. PAKULA et al., 'GROWTH OF GaN METALORGANIC CHEMICAL VAPOR DEPOSITION LAYERS ON GaN SINGLE CRYSTALS', Vol.88, No.5, ACTA PHYSICA POLONICA A, 1995, pages 861 to 864	1-11
A	JP 08-250802 A (Fujitsu Ltd.), 27 September, 1996 (27.09.96), Par. Nos. [0012] to [0025] (Family: none)	3,9-11

Further documents are listed in the continuation of Box C.

See patent family annex.

- \* Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed
- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "Z" document member of the same patent family

Date of the actual completion of the international search 03 February, 2003 (03.02.03)	Date of mailing of the international search report 18 February, 2003 (18.02.03)
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Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

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Telephone No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Akito KURAMATA et al., "III-V zoku Chikkabutsu Handotai ni okeru Kiban no Kadai", Vol.65, No.9, Oyobutsuri, 1996, pages 936 to 940; Page 939, '3.3 Growth on Sic(1-100) Substrate'	3,10
A	EP 0716457 A2 (NICHIA CHEMICAL INDUSTRIES, LTD.), 12 June, 1996 (12.06.96), Full text; all drawings & JP 08-228025 A & CN 1132942 A & US 5777350 A	8-11
A	US 5780876 A1 (HATA), 14 July, 1998 (14.07.98), Full text; all drawings & US 5866440 A & JP 08-293643 A	8-11

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## Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
  
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
  
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

- I. Claims 1-7 relate to a light emitting element structure using a single crystal cut out of a bulk single crystal formed by a super-critical ammonia soda process.
- II. Claims 8-11 relate to a light emitting element structure comprising a protection film formed on an In-containing active layer by using a super-critical ammonia soda process.

These two groups of inventions are not considered to be a group of inventions so linked as to form a single general inventive concept.

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
  
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest     The additional search fees were accompanied by the applicant's protest.  
 No protest accompanied the payment of additional search fees.